CHARACTERISTICS OF MUSTARD (BLISTER) AGENTS

Mustard (blister) agent, purified sulfur mustard or distilled mustard, has a five percent sulfur impurity, less odor and greater blistering power than the original mustard agent used in World War I.

The mustard agent stored at Blue Grass Chemical Activity is known as Agent H, and contains about 20–30 percent impurities. In its pure liquid state, mustard agent is colorless. However, when exposed to impurities, it becomes a pale yellow to brown oily substance. Mustard agent freezes at 58°F, is liquid at any temperature above 58°F and boils (becomes a vapor with a garlic-like odor) at 419°F.

Exposure to mustard agent causes inflammation of the eyes, nose, throat, trachea, bronchi and lung tissue and blisters the skin. In amounts approaching the lethal dose, injury to bone marrow, lymph nodes and spleen may occur. Mustard agent is toxic and the International Agency for Research on Cancer has deemed it a carcinogen (cancer-causing agent).

Are mustard agents harmful?

It would take an accident such as an explosion or fire in order to be exposed to mustard agent. In a fire, most of the agent would burn up, but some would stay in the smoke. Emergency officials call this smoky cloud and the invisible parts around it the plume.

As the plume drifts away from the scene of the accident, small drops of the blister agent may fall to the ground. These liquid drops are called the aerosol. The aerosol is harmful if it makes contact with the skin or if contaminated food or drink is consumed. This is very unlikely because the aerosol is heavy and quickly falls out of the plume close to the accident site.

Some tiny parts of the mustard, called vapor, stay in the plume as it drifts from the accident. Vapor inhalation is harmful. Because the vapor travels farther from the accident than the aerosol, it is the greater danger over a large area. Do not depend on seeing or smelling mustard vapors when asked to take protective action. Invisible mustard vapors will expand beyond any visible smoke, and the faint garlic-like odor of mustard is not a trustworthy sign of a hazard because lower levels of vapor, which are odorless, can be harmful. However, the vapor becomes less harmful the farther the plume travels as it mixes clean air. The clean air dilutes the agent until it is no longer harmful.

To better understand a mustard exposure, one can use the following analogy. Like mustard, perfume in a bottle is liquid. When sprayed, the liquid becomes an aerosol. If sprayed on someone, the perfume drops will cling to skin, hair and clothes. If sprayed from the other side of the room, the aerosol drops will not touch skin or clothing, but the fragrance is still detectable. That fragrance is the vapor.

What are the signs of exposure?

Symptoms of mustard exposure may not show up for two to 24 hours. Symptoms may include redness and stinging of eyes or skin, followed by skin blisters, burning of the nose and sinuses, sore throat and hoarseness or coughing. The severity of exposure depends on how much mustard is in the vapor and the length of time of exposed.

Avoiding the mustard vapor should always be the primary goal. However, anyone with symptoms of mustard exposure should call for medical help immediately and follow those instructions.

Anyone outside before taking shelter or leaving the area who suspects mustard exposure should take the following steps: If in a sealed shelter, take off outer clothing, put them in a plastic bag and seal the bag. If water is available in the shelter, wash or take a cool to warm (not hot) shower, using lots of soap and water. Keep soap out of eyes; just use lots of water. Do not ventilate or leave the sealed shelter until told to do so. Anyone who does leave the area should tell emergency responders or medical staff about any possible mustard exposure. Tell emergency responders about the sealed bag so that they can arrange for its safe removal after the emergency.

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